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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,112	02/01/2002	Curtis E. Adams	00069CON	9977

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Michelle B. Lando, Esq.
CABOT CORPORATION
Law Department
157 Concord Road
Billerica, MA 01821

EXAMINER

NILAND, PATRICK DENNIS

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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12/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/062,112

Applicant(s)

ADAMS, CURTIS E.

Examiner

Patrick D. Niland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/31/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,5-7,9,11-13,15-19,23-25,29,33,49 and 51-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33,49 and 51-54 is/are allowed.
- 6) ☒ Claim(s) 3,5-7,9,11-13,15-17,23-25, and 29 is/are rejected.
- 7) ☒ Claim(s) 18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/07 has been entered.

The amendment of 10/31/07 has been entered. Claims 3, 5-7, 9, 11-13, 15-19, 23-25, 29, 33, 49, and 51-54 are pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3, 5-9, 11-13, 15-17, 22-25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. (U.S. 6,251,175) in view of either Belmont et al. (U.S. 5,713,988) or Johnson et al. (U.S. 6,478,863).

Zhu et al. disclose ink jet ink comprising non-aqueous liquid vehicle, pigment, polymer that comprises anionic functional group, i.e. styrene-acrylic acid or polyacrylic acid, and salt having polyvalent metal cation such as calcium. There is further disclosed a method wherein the above ink is incorporated into ink jet printer and then printed onto substrate (col.1, lines 10-13, col.2, lines 36-44, col.3, lines 8-17, 27, and 30-31, col.5, lines 33-34 and 58-64, and col.7, lines 22 and 25).

The difference between Zhu et al. and the present claimed invention is the requirement in the claims of specific pigment.

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Belmont et al., which is drawn to non-aqueous ink jet inks, disclose the use of modified pigment comprising pigment such as carbon black having attached aromatic group containing anionic functional group such as carboxyl group in order to produce ink with improved jettness and improved optical properties (col. 1, lines 14-15 and 37-45, col.2, line 65-col.3, line 1, col.3, lines 15-22, and col.4, lines 4-10).

Alternatively, Johnson et al., which is drawn to non-aqueous ink jet inks, disclose the use of modified pigment comprising pigment such as carbon black or organic pigment having attached anionic functional group such as carboxyl group. The motivation for using such pigment is that there is no need for the ink to contain dispersant, pigment has increased dispersability, and there is a significant advantage and cost savings by reducing or eliminating the milling steps used with conventional pigment (col. 1, lines 54-57, col.3, lines 31-37, col.3, line 64-col.4, line 18, col.6, lines 18-25 and 55, col.10, lines 60-62, col.11, lines 13-19, and col.14, lines 33-43).

Although there is no disclosure that anionic functional group present on the pigment as disclosed by Belmont et al. or Johnson et al. and the anionic functional group present on the polymer of Zhu et al. are capable of coordinating with the polyvalent cation of the salt disclosed by Zhu, given that Belmont et al. or Johnson et al. each disclose pigment having attached anionic functional group identical to that presently claimed and Zhu discloses polymer having anionic functional group identical to that presently claimed and salt comprising polyvalent cation identical to that presently claimed, it is clear that the functional group of each of the pigment and the polymer are intrinsically capable of coordinating with the polyvalent ion.

In light of the motivation for using specific pigment disclosed by Belmont et al. or Johnson et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Zhu et al. in order to produce ink with improved jettness and improved optical properties, or alternatively, to produce ink with improved dispersability, and thereby arrive at the claimed invention.

Specifically, applicant argues that in order to arrive at the present invention one would have to choose pigment, which is a non-preferred embodiment of Zhu et al. and only generically disclosed, choose presently claimed polymer from many types of polymer disclosed by Zhu, and choose presently claimed salt from many types of conductivity agents disclosed by Zhu et al.

However, while it is agreed that one must choose pigment, presently claimed polymer, and presently claimed salt from Zhu et al. to arrive at the present invention, the fact remains that Zhu et al. explicitly discloses ink comprising pigment, polymer having anionic functional group such as styrene-acrylic acid or polyacrylic acid, and salt having polyvalent metal cation such as calcium chloride. Further, the choice of each of the pigment and salt is not from amongst vast number of choices but from amongst group of 2, i.e. dye or pigment, and 11, respectively. While it is agreed that pigment is not the preferred colorant, it is noted that "non-preferred disclosures can be used. A non preferred portion of a reference disclosure is just as significant as the preferred portion in assessing the patentability of claims", *In re Nehrenberg*, 280 F.2d 161,126 USPQ 383 (CCPA 1960). Further, it is significant to note that acrylic resin such as styrene--acrylic acid is one of the preferred binders disclosed by Zhu et al.

Applicant also argues that choosing the presently claimed components from Zhu et al. would go against the teaching of Zhu et al. that states that the ink must meet certain rigid

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requirements relating to viscosity, resistivity, solubility, compatibility of components, and wettability of substrate. Specifically, applicants argue that the replacement of Zhu et al.'s generic pigment for a modified pigment is not straightforward.

However, it is the examiner's position that the combination of Zhu et al. with Belmont et al. or Johnson et al. is proper.

Specifically, Belmont et al., which is drawn to non-aqueous ink jet ink as is Zhu et al., disclose the use of modified pigment such as carbon black having attached aromatic group containing amine functional group such as carboxyl group in order to produce ink with improved jettness while Johnson et al., which is also drawn to non-aqueous ink jet ink, disclose the use of modified pigment comprising carbon black or organic pigment having attached anionic functional group such as carboxyl group. Thus, given that Zhu et al. is open to the inclusion of any pigment, given that Belmont et al. and Johnson et al. are each drawn to non-aqueous ink jet ink as is Zhu et al., and given that Belmont et al. and Johnson et al. each provide motivation for using the modified pigment as the pigment in Zhu et al., it is the examiner's position that the Combination of Zhu et al. with Belmont et al. or Johnson et al. is proper.

Applicant also argues that Zhu et al. state that its essential that the ink jet ink have viscosity of from about 1.0 to about 10 cPs in order to achieve the disclosed rheological characteristics and thus, one skilled in the art would avoid combination of components that would undesirably rise the viscosity such as the use of salt with polyvalent metal cation, modified pigment, and additive binder comprising anionic group which may result in the flocculation of the pigment.

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However, while applicant argues that flocculation "may" occur or that the combination of such components "may" cause undesirable rise in viscosity, there is no evidence to support that such events would occur when combining Zhu et al. with Belmont et al. or Johnson et al.

Further, given the disclosure in Zhu et al. regarding the desired viscosity, it would have been obvious to one of ordinary skill in the art to control the viscosity of the ink to such values.

Given that Zhu et al. explicitly disclose the use of pigment, polymer such as styrene-acrylic acid, and salt such as calcium chloride with no disclosure that any combination of elements cannot be used together, given that Zhu et al. disclose the use of "any" pigment, and given that Belmont et al. and Johnson et al. each provide motivation to utilize pigment having anionic group in ink jet inks, and absent evidence to the contrary, it is the examiner's position that there is a reasonable expectation of success when combining Zhu et al. with Belmont et al. or Johnson et al. The applicant's arguments have been fully considered but are not persuasive for the reasons stated above.

4. Claims 33, 49, and 51-54 are allowable over the "closest" prior art Zhu et al. (U.S. 6,251,175),

Belmont et al. (U.S. 5,713,988), or Johnson et al. (U.S. 6,478,863) given that there is no disclosure in Zhu et al., Belmont et al., or Johnson et al. of ink comprising modified pigment having attached cationic group, at least one salt having a polyvalent anion, and polymer comprising cationic functional group wherein the cationic functional group of each of the pigment and polymer are capable of coordinating with the polyvalent anion.

5. Claims 18-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim

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and any intervening claims.

Claims 18-19 would be allowable if rewritten in independent form as described above given that while the "closest" prior art Zhu et al. (U.S. 6,251,175) disclose use of ammonium, alkali, or alkaline earth metal salts, there is no disclosure or suggestion of salt wherein the polyvalent ion is Zn^{+2} or Zr^{+4} .

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick D. Niland whose telephone number is 571-272-1121. The examiner can normally be reached on Monday to Thursday from 10 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Patrick D Niland
Primary Examiner
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